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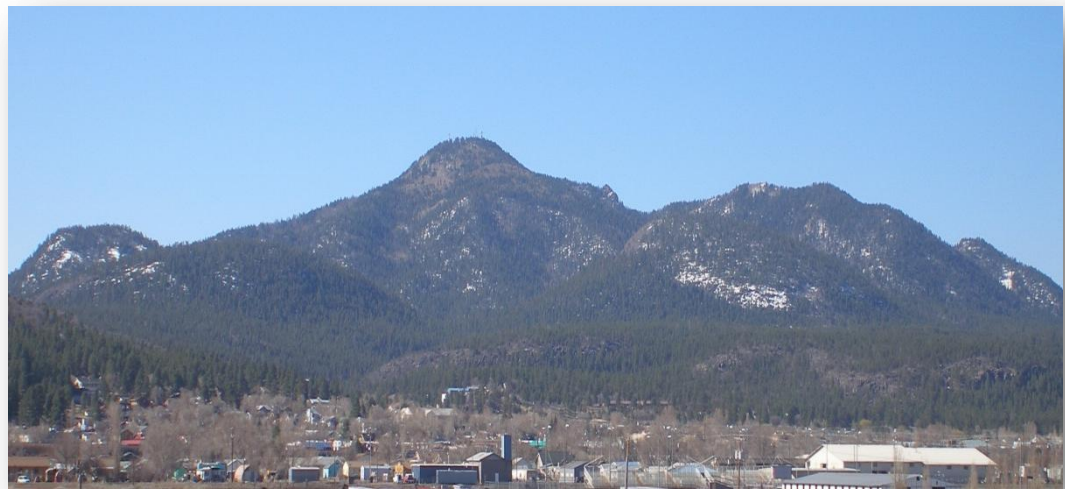


Bill Williams Mountain Restoration Project

Supplemental Draft Environmental Impact Statement

Kaibab National Forest Coconino County, Arizona

All or portions of Sections 1-3, 10-15, 22-27, & 34-36 T21N R1E; Sections 4-10, 15-22, & 27-31 T21N R2E; and Sections 31-33 T22N R2E Gila & Salt River Meridian.



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Supplemental Draft Environmental Impact Statement for the Bill Williams Mountain Restoration Project

**Kaibab National Forest, Williams Ranger District
Coconino County, Arizona**

October 2013

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Abstract

This Supplemental Draft Environmental Impact Statement (SDEIS) supplements the July 2012 Bill Williams Mountain Restoration Project Draft Environmental Impact Statement (DEIS). It updates the analysis for Alternative 2 – the Proposed Action based on new information that has emerged since the DEIS was completed and clarifies portions of the project. Supplemented portions of the DEIS include: clarification that the Bill Williams Mountain project may be signed under either the current 1988 Kaibab Forest Plan (as amended) or the revised Forest Plan (the Kaibab Forest Plan is currently undergoing revision); consistency checks for both the current and revised forest plans (these consistency checks are in the project record); clarification of the incorporation of the 2012 Mexican spotted owl (MSO) recovery plan in the project; two additional forest plan amendments related to 24-inch tree retention and treatments in the 100-acre MSO core area; additional mitigation and clarification on how snags will be addressed in this project; three additional mitigation measures tied to wildlife habitat; clarification that Alternative 2 proposes 31 acres of cable logging treatments within the Bill Williams Mountain Mexican spotted owl protected activity center; and information on the new project-level, pre-decisional review process (36 CFR Part 218) and how it now applies to this project.

The July 2012 Bill Williams Mountain Restoration DEIS describes the purpose of and need for the project, alternatives, affected environment, and environmental consequences. This information is not repeated here unless it is needed to clarify the supplemental information. The Kaibab National Forest proposes mechanical treatments and prescribed burning on approximately 15,200 acres on and surrounding Bill Williams Mountain to reduce the risk of catastrophic wildfire, improve forest health, and protect the City of Williams municipal watershed.

The project has four alternatives: Alternative 1 is no action, Alternative 2 – the Proposed Action is the preferred alternative, and Alternatives 3 and 4 are modifications of the preferred alternative. The 2012 DEIS proposed four non-significant, one-time, site-specific Forest Plan amendments that would be needed to implement the preferred alternative under the current Forest Plan (as amended). These are: 1) re-designating approximately 8,900 acres of land suitability; 2) allowing a deviation from Forest Plan guidelines regarding MSO habitat; 3) allowing a deviation from Forest Plan guidelines in ponderosa pine stands outside of northern goshawk Post-Fledgling Family Areas (PFAs) and nest areas; and 4) allowing forest managers to exceed fire planning objectives for the Arizona Bugbane Botanical Area (DEIS, p. 14). No Forest Plan amendments will be required if the project is implemented under the revised Forest Plan.

The 2012 DEIS can be accessed online at:

<http://www.fs.usda.gov/projects/kaibab/landmanagement/projects>

Comments on the SDEIS

It is important that reviewers provide their comments at such times and in such a way that they are useful to the Agency's preparation of the Environmental Impact Statement. Therefore, comments should be provided prior to the close of the comment period and should clearly

articulate the reviewer's concerns and contentions. The submission of timely and specific comments can affect a reviewer's ability to participate in subsequent administrative review or judicial review.

Timely, clearly articulated comments will enable the USDA Forest Service to analyze and respond to the comments at one time and to use information acquired in the preparation of the Final Environmental Impact Statement, thus avoiding undue delay in the decision making process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions. Comments on the supplemental DEIS should be specific and should address the adequacy of the Statement and the merits of the alternatives discussed (40 CFR 1503.3).

Comments received in response to this solicitation, including names and addresses of those who comment, will be part of the public record for this proposed action. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the respondent with standing to participate in subsequent administrative review or judicial review.

Comments should be within the scope of the proposed action, have a direct relationship to this SDEIS, and must include supporting reasons for the responsible official to consider (36 CFR 218.2). Only individuals or entities (as defined by 36 CFR 218.2) who submit timely and specific written comments (as defined by 36 CFR 218.2) about this proposed project or activity during this or another public comment period established by the responsible official will be eligible to file an objection.

Comments may be sent via email to: comments-southwestern-kaibab@fs.fed.us

or via facsimile to (928) 635-5680 with "Bill Williams Mountain Restoration Project" in the subject line.

Written comments may be sent to: Kaibab National Forest, Attention: Bill Williams Mountain Restoration Project, 742 South Clover Road, Williams, AZ 86046.

Comments must be received during the 45-day comment period which follows publication of the Notice of Availability of the Supplemental Draft Environmental Impact Statement in the Federal Register. Publication is estimated for November 2013. This Supplemental DEIS and the 2012 DEIS are based on documents in the project record that are available upon request.

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Bill Williams Mountain Restoration Project Supplemental DEIS

Introduction

This analysis supplements the July 2012 Bill Williams Mountain Restoration Project Draft Environmental Impact Statement (DEIS).

The 2012 Bill Williams Mountain Restoration DEIS describes the purpose of and need for the project, alternatives, affected environment, and environmental consequences. That information is not repeated here unless it is needed to clarify the supplemental analysis.

This Supplemental DEIS (SDEIS) updates the analysis in the DEIS based on new information that has emerged since the original analysis was completed and clarifies portions of the project. Supplemented portions of the DEIS relate to Alternative 2 – the Proposed Action and include:

- Current (1988 Kaibab Forest Plan, as amended) and revised Forest Plan consistency checks
- Clarification on the Forest Plan amendment language
- Two additional non-significant Forest Plan amendments (related to 24-inch tree retention and treatments in the 100-acre Mexican spotted owl [MSO] core area)
- Clarification on how snags will be addressed in this project including an additional project mitigation measure tied to snags and down woody debris
- The addition of three project mitigation measures tied to wildlife habitat protection
- Clarification that 31 acres of cable logging treatments are proposed within the Bill Williams Mountain Mexican spotted owl protected activity center
- Information on the project-level pre-decisional administrative review process that recently went into effect (36 CFR Part 218) and how it applies to this project

Public Involvement

The development of the proposed action and the July 2012 DEIS included extensive public involvement (DEIS p. 5 and Chapter 4). A 45-day comment period for this SDEIS will begin when the Environmental Protection Agency publishes the notice of availability in the Federal Register. This supplemental DEIS is being distributed to everyone on the mailing list for original Bill Williams Mountain Restoration DEIS. Reviewer comments on the 2012 DEIS need not be resubmitted. Those comments together with any new comments received on this SDEIS will be responded to in the Final EIS.

Supplemental Information

Current and Revised Kaibab National Forest Plan Consistency Checks

The Kaibab National Forest is currently operating under the 1988 Kaibab Forest Plan, as amended. All references within this Supplemental DEIS to the “current” Forest Plan relate to this document. The Kaibab NF is in the process of revising its Forest Plan. The Record of Decision (ROD) for the revised plan is expected to be signed in 2013. As a result, the ROD for the Bill Williams Mountain Restoration Project could be signed under the current Forest Plan or the revised Forest Plan. In order to demonstrate project consistency with both plans, consistency documentation for the Bill Williams project was prepared for both the current and the revised forest plans. These consistency checks can be found in the project record.

The current Forest Plan consistency check reviewed Plan direction from the 1988 Forest Plan, as amended. The consistency check covered all resource areas as outlined and provided for in the current Plan. The action alternatives in the Bill Williams Mountain Restoration Project are found to be consistent with the current Forest Plan except for where non-significant Forest Plan amendments are proposed in the 2012 DEIS or in this SDEIS.

The revised Forest Plan consistency check reviewed Plan direction from the revised Forest Plan. The consistency check covered all resource areas as outlined and provided for in the revised Plan. The action alternatives in the Bill Williams Mountain Restoration Project are found to be consistent with the revised Forest Plan. There are no proposed amendments required for the action alternatives under the revised Forest Plan. Those wishing to review the revised Kaibab Forest Plan may contact Ariel Leonard, Kaibab Forest Planner, at 928-635-8283.

Current Forest Plan Amendments included in the 2012 DEIS

The DEIS was prepared with the assumption that the project decision would be signed under the current plan (1988 Kaibab Forest Plan, as amended). Alternatives 1, 3, and 4 do not have any Plan amendments. Alternative 2 – the Proposed Action originally included the following four Forest Plan amendments:

1. Amend the Forest Plan to re-designate the land suitability classification on 8,954 acres of ponderosa pine cover type within the project area to allow restoration treatments to move vegetative conditions toward the reference conditions for the area. This amendment will reduce the acres of land suitable for timber production by 8,954 acres.
2. Allow a one-time project-specific amendment to the Forest Plan to allow the Forest to deviate from Forest Plan Guidelines for Mexican spotted owls on steep slopes (slopes $\geq 40\%$) and within the Bill Williams Protected Activity Center by harvesting and thinning conifers greater than nine inches in diameter (see Chapter 4 of the current Forest Plan page 24).

3. Allow a one-time project-specific amendment to the Forest Plan to allow the Forest to deviate from Forest Plan guidelines in ponderosa pine cover type outside of goshawk post-fledgling family areas (PFAs) and goshawk nest areas by not meeting the canopy cover guidelines for vegetation structural stages (VSS) 4, 5, and 6 (see Chapter 4 of the current Forest Plan, pages 29-30).
4. Allow a project-specific amendment to the Forest Plan to allow the Forest to exceed the maximum fire size (one acre) and average annual burned area objectives (1/10th acre) within Land Use Zone – Special Area 6, the Arizona Bugbane Botanic Area (see page 93 of the current Forest Plan).

Two Additional Non-Significant Amendments to Current Forest Plan

The current Forest Plan consistency check highlighted the need for two additional non-significant, site-specific Forest Plan amendments under Alternative 2 – the Proposed Action:

Cutting trees with >24 inch diameter at breast height (DBH) within MSO restricted habitat

The proposed Plan amendment would allow Alternative 2 – the Proposed Action to deviate from the current forest plan direction to “save all trees >24 inches DBH” within MSO restricted habitat (see Kaibab National Forest Plan Chapter 4, page 26). This deviation from the current direction is needed because some large trees may need to be removed on a limited basis to allow reasonable access for machinery.

The Proposed Action would not “save all trees >24 inches DBH” in restricted areas. Incidental cutting of trees >24 inches DBH would be allowed under Alternative 2 for the creation of temporary roads. Cutting of trees >24 inches DBH would be avoided as possible, and would be limited to where temporary roads would be constructed.

Treatment in MSO 100 acre no treatment area.

This proposed plan amendment will allow Alternative 2 – the Proposed Action to deviate from the current Forest Plan direction to allow treatment within the 100-acre “no treatment area” in the Bill Williams PAC (current Forest Plan Chapter 4, page 24). Alternative 2 will allow thinning and burning within the “no treatment” area in the Bill Williams PAC. Prescriptions in the PAC would be restricted to thin from below and low-intensity fire.

Mexican Spotted Owl Revised Recovery Plan Background

The Recovery Plan for the Mexican spotted owl (MSO), First Revision was published in December, 2012, after the DEIS for the Bill Williams Mountain Restoration Project had been released for public comment. The Recovery Plan for the MSO, First Revision, states:

- "...approved recovery plans effectively constitute a FWS guidance document on that listed species or group of species, thereby serving as a logical path from what is known about the species' biology, life history, and threats to a recovery strategy and program. In some cases, recovery plans are followed by other Federal agencies in order to meet the provisions of 2(c)(1) and 7(a)(1) of the [Endangered Species Act], which require Federal agencies to utilize their authorities in carrying out programs for the conservation of endangered and threatened species. Agency regulations and policies (e.g., those implementing the National Forest Management Act) may also encourage management under recovery plan guidelines."
- "The Recovery Plan for the Mexican Spotted Owl (Recovery Plan; USDI FWS 1995) was completed by FWS Region 2 (Southwest Region) in December 1995. Since that time, we have acquired new information on the biology, status, distribution, and other aspects of the Mexican spotted owl's life history. This Recovery Plan for the Mexican Spotted Owl, First Revision, revises the 1995 Recovery Plan, incorporating new information on the owl's biology, threats, and recovery needs, and outlines a comprehensive program for its recovery. We intend that this revised Recovery Plan be a stand-alone document. In other words, although the original Recovery Plan is referenced throughout this revised version, everything needed to inform recovery of the Mexican spotted owl is included herein."
- "The Mexican Spotted Owl Recovery Plan is based on the best available science. When published papers were not available, the Recovery Team conducted analyses and modeling to inform the development of management recommendations. The management recommendations should not be considered the end point. Rather, they represent a starting point and can be adjusted and improved as new information is acquired."
- "Currently, the Mexican spotted owl is threatened primarily by habitat degradation and loss of old growth nesting habitats through stand-replacing wildland fire (Listing Factor A)...Reducing fire risk in southwestern forests frequently involves mechanical thinning treatment, prescribed fire, or both activities in concert. USDI FWS (1995) recommended prescribed fire and thinning from below in PACs. However, little thinning occurred and some fire managers opted to avoid burning because the high fuel loads and seasonal restrictions combined to create an unacceptable risk that fires would escape prescription. Consequently, little fuels reduction has occurred in PACs, most remain in a fire prone condition, and many PACs have undergone significant degradation following these wildland fires. We view this situation as unsustainable in the long term. Although many owls continue to occupy burned areas, at least in the short term (summarized in Appendix B), we do not view the long-term cumulative loss of large areas of owl habitat to stand replacing fire as conducive to recovery."

Consistency with the 2012 MSO Recovery Plan

All action alternatives in the Bill Williams Mountain Restoration Project are consistent with Appendix C in the revised MSO recovery plan. The forest performed a consistency check to ensure intent of the recovery plan will be met. This document can be found in the project record.

Additional Mitigation Measures and Clarification of Snag Conservation

In order to provide safe working conditions in project areas that would be harvested with a cable system or by helicopter, snags would have to be removed. This could result in some short term loss in habitat; however, this would be outweighed in the long term by improved forest structure, function, composition, and reduction in risk of uncharacteristic high severity fire.

All action alternatives would ensure conservation of snags. Additionally, this supplement will incorporate the following mitigation measures into the project:

1. Retain an average of at least 3 snags (>18" DBH) per acre, 5 downed logs (>12" midpoint diameter) per acre, and 10-15 tons of woody debris per acre (including downed logs) in mixed conifer forest and any forested habitat within the Bill Williams PAC. Retain an average of at least 2 snags per acre, 3 downed logs per acre, and 5-7 tons of woody debris per acre (including downed logs) in ponderosa pine (including pine-oak) forest. Retention of these features will be measured at the mid-scale (approximately the 100-acre scale). Emphasize retention of snags that were created from trees that died slow deaths, not those created by high-severity fire or insect infestation. In order to retain desired snag densities, the following measures will be taken:

- a) Snags >18" DBH will not be removed from pre-settlement patches (identified in Appendix F of the DEIS, attached here for reference). Where snags are present in these patches, use alternate fuels treatment methods (e.g., thin from below, piling, burning) that would not require removal of snags.
- b) Design helicopter and logging units to maintain groups and clumps of snags >18" DBH in the forested matrix outside pre-settlement patches and on slopes >40%.

Within the proposed cable and helicopter logging units, some snags may be removed for safety reasons, and other snags would be retained. In addition, all snags within pre-settlement patches would be retained for MSO conservation. The above mitigation measures will ensure snags are conserved across the project area.

Additional Mitigation Measures for Wildlife Habitat Protection

- Peregrine falcon habitat: Prohibit activities which disturb nesting birds between March 15 and August 15.
- Raptors other than MSO and Northern Goshawk: Retain raptor nest tree-groups and a non-activity buffer by providing a 3-chain (approximately 200 ft) buffer zone around the nest.

- Red squirrel habitat: Maintain the overstory integrity 1/2 chain (33 ft) from red squirrel caches. Where operationally feasible, reduce direct disturbance to known caches.

Clarification of Proposed Cable Logging within the Bill Williams MSO PAC

The 2012 Bill Williams Mountain Restoration Project DEIS revealed that Alternative 2 proposes 480 acres of cable logging within Mexican spotted owl protected habitat. The DEIS also discusses the effects of this activity occurring there (see DEIS, pages 178 to 179). However, the DEIS does not indicate how much cable logging is proposed within the Mexican spotted owl protected activity center (PAC), which is contained within this protected habitat area. Thirty-one acres of cable logging are proposed within the Bill Williams Mountain PAC under Alternative 2. All cable logging proposed in the PAC would be accomplished with exca-lining as described in the DEIS. Cable logging operations would cause a loss of most snags and trees (including snags > 18" DBH and trees > 24" DBH) across approximately 15% of the area with this proposed treatment within the PAC in order to provide cable corridors and safe logging operations. Approximately 15%, or 5 acres, of the PAC area treated with cable logging operations would have most trees removed within these corridors under Alternative 2.

218 Rule Changes for the Project

On March 27, 2013, the Forest Service issued the final rule to establish a project-level pre-decisional administrative review process. The new regulations, found at 36 CFR 218 (available at: <https://www.federalregister.gov/select-citation/2013/09/06/36-CFR-218>) provide an opportunity for individuals, organizations and tribal entities to file an objection to a project before the final decision is signed. This allows interested individuals, organizations and tribal entities to advise the responsible official about concerns regarding the final decision before the decision is made.

Prior to that date, two administrative review processes were used for projects. The first was the appeal procedures found at 36 CFR 215. These post-decisional procedures applied to all projects implementing a land and resource management plan and documented in a decision notice (DN) or record of decision (ROD). The second was the objection procedures found at 36 CFR 218. These pre-decisional procedures previously applied only to hazardous fuels reduction projects authorized under the Healthy Forests Restoration Act, but will now apply to all projects to be documented in a DN or ROD signed after September 27, 2013. Projects categorically excluded from documentation in an Environmental Assessment (EA) or Environmental Impact Statement (EIS) and that are documented in a decision memo will continue to be subject to the 215 appeal procedures.

Planning for the Bill Williams Mountain Restoration Project began under the appeal process (36 CFR 215). However, because a ROD was not signed before September 27, 2013, the project is now subject to the objection process.

The comment period for an EIS has not changed. Comments on this SDEIS will be accepted for 45 days following the date of publication of the notice of availability in the

Federal Register. The new 218 regulations allow anyone who submitted timely, specific written comments about the proposed project during any designated opportunity for public comment to file an objection to the draft decision (36 CFR 218.5). As a result, written comments received during scoping, the comment period on the DEIS, or any of the public meetings provide standing to object to the draft decision and need not be resubmitted.

When the Final EIS and draft ROD are released for public review, a 45-day period will be provided for review of the documents and filing of objections to the ROD. Objections will be subject to review by a “reviewing officer.” Because the responsible official for this project is the Kaibab National Forest Supervisor, the reviewing officer will be the Regional Forester. The objection process may include an opportunity for the objector to meet with the reviewing officer and the responsible official, with the objective of resolving the concerns expressed in the objection. The responsible official cannot sign the final decision until the reviewing officer has responded in writing to all pending objections. The decision must be consistent with any instructions issued by the reviewing officer. There will be no opportunity for additional administrative review or appeal of the final decision.

Appendix F: Silvicultural Treatments in Pre-Settlement Patches of Forest in MSO Protected Habitat and the Arizona Bugbane Botanical Area

This appendix is being added to the EIS to clarify silvicultural treatments proposed in pre-settlement patches in Mexican spotted owl protected habitat and the Arizona bugbane botanical area in the Bill Williams Mountain project area.

The United State Forest Service (USFS) and United States Fish and Wildlife Service (USFWS) worked together to identify pre-settlement patches (i.e., dense forest patches historically dominated by old, large diameter trees that persist today; see the map at the end of this appendix) that are greater than two acres in size. These patches are to be maintained and managed to provide nest and roost habitat for the conservation of the Mexican Spotted Owl (MSO) and maintaining canopy closure for Arizona bugbane. The patches are delineated both within and outside of the MSO Protected Activity Center. This section outlines details regarding treatments within and around these patches. It provides further explanation that remains consistent with the action alternatives, desired conditions, analysis, mitigation measures, and other components of the Bill Williams Mountain Restoration Project.

Methods for Delineating Pre-Settlement Patches

The District biologist geo-referenced 1949 aerial photographs of Bill Williams Mountain and used these photos, in combination with 2010 ortho photos, to delineate patches of pre-settlement trees that were greater than 2 acres in size. The 1949 aerial photographs provided geospatial data that illustrated where large, contiguous patches of big, old trees historically occurred on the landscape.

The Forest confirmed that delineations based on 1949 aerial photos and 2010 ortho photos included the best patches of nesting and roosting habitat for MSOs by overlaying other geospatial data. These data displayed northern aspects, the presence of drainages, and information on general tree density and density of trees >18" DBH.

The fire ecologist, silviculturist, and biologist met with staff from the USFWS and Arizona Game and Fish Department (AZGFD) to revise the patch delineations as necessary. The USFWS and AZGFD agreed with the patch delineations. The input of the USFWS and AZGFD are reflected in the map (figure F-1) and the description of silvicultural treatments within this appendix.

Treatments in MSO Protected Habitat

Desired conditions for Protected Habitat – including areas outside pre-settlement patches – are described in Appendix E of the DEIS. Protected Habitat will have an average basal area of 80 ft² per acre (including forested and non-forested areas). As pre-settlement patches and smaller tree groups will be managed for higher basal areas, the matrix around these patches and groups will be managed for lower basal areas. Lower basal areas in the matrix will promote more diverse horizontal structure and reduce the probability of stand-replacing wildfire in pre-settlement patches and groups. There will be scattered individual and small groups of small to large trees between delineated patches. Pre-settlement patches will range from 60-160 ft² per acre basal area. Pre-settlement patches

that are managed for higher basal would be dominated by trees >18" DBH. Patches managed for lower basal areas will be comprised of smaller size classes of trees (generally <18" DBH) to allow for growth into closed-canopy mature groups. Fewer tree patches will occur in areas that were historically open (generally with less than 10 trees/acre in pre-settlement times). Trees > 18" DBH will represent the majority of the basal area in Protected Habitat – both in and outside of pre-settlement patches.

The two silvicultural treatment types within pre-settlement patches will be single (a.k.a., individual) tree selection or thin-from-below treatments. In general, pre-settlement patches dominated by large trees will be managed with thin-from-below treatments. Patches that are mixed-age will present more opportunities for single tree selection.

Individual stands may have a high density of trees 18-24" DBH and be deficient in vertical diversity and diversity of tree size classes. These are desired components of nesting/roosting habitat (Table C.2 of the 2012 Recovery Plan; FWS 2012). In some stands post-settlement trees up to 24" DBH could be removed to help create desired vertical diversity as described in the recovery plan. Pre-settlement trees and trees >24" DBH would be retained in MSO habitat except where they are incidentally taken due to harvesting operability needs or unforeseen circumstances related to safety.

Patches dominated by pre-settlement trees would be thinned from below to reduce ladder fuels, and create canopy gaps (approximately 1/10 acre in size) where existing canopy gaps can be enhanced. Mitigation measures to conserve pre-settlement and 24"+ DBH trees will drive prescriptions to mimic forest 'gap dynamics'. Gap dynamics are the change in space and time in the pattern, frequency, size, and successional processes of forest canopy gaps caused by the fall or death of one or more canopy trees, which creates a canopy gap. The fall or death of one or more canopy trees is where the new cohort of trees recruits into a patch. In general, gaps would be formed in areas that lack pre-settlement and 24"+ DBH trees and contain surpluses of trees < 18" DBH. Trees up to 24" DBH (mainly 18" DBH and below) would be removed to mimic gaps for regeneration recruitment. To create variability and vertical structure, higher amounts of young (<5" DBH), intermediate (5-9" DBH), and suppressed trees will be retained in areas of lower fire hazard. Examples of such areas include moist drainages or depressions.

Single tree selection would be used in pre-settlement patches where the forested area is not dominated by pre-settlement trees. It will strive to maintain all size classes of trees. This means that a substantial amount of vertical diversity of smaller trees will occur within canopy openings and under residual trees. Canopy openings for regeneration are very small (i.e., they are created by removing a single, mature tree). These mature, post-settlement trees would be up to 24" DBH but would mainly be 18" DBH and below. The different age classes of trees would be intermixed and close enough to each other that individual tree groups would not be readily apparent. A diversity of age/size classes would be maintained within these patches. This treatment focuses on sustaining a dominant component of mature and pre-settlement trees across the landscape into the future.

Treatments in the Arizona Bugbane Botanical Area

Treatments in pre-settlement patches for the conservation of Arizona bugbane will maintain the integrity of the overstory canopy. The USFWS and USFS agreed to delineate an inner buffer, limited treatment buffer, and additional pre-settlement patches within the Botanical Area that serve as suitable habitat (see page 20 of the DEIS for an explanation of buffer zones). Thin-from-below treatments will be conducted in these areas to maintain the integrity of the overstory. Incidental suppressed, young, and intermediate trees may be removed to promote gap dynamics. Some suppressed, young, and intermediate trees will be retained in areas that do not increase the risk of torching and crowning under the initial prescribed fire event.

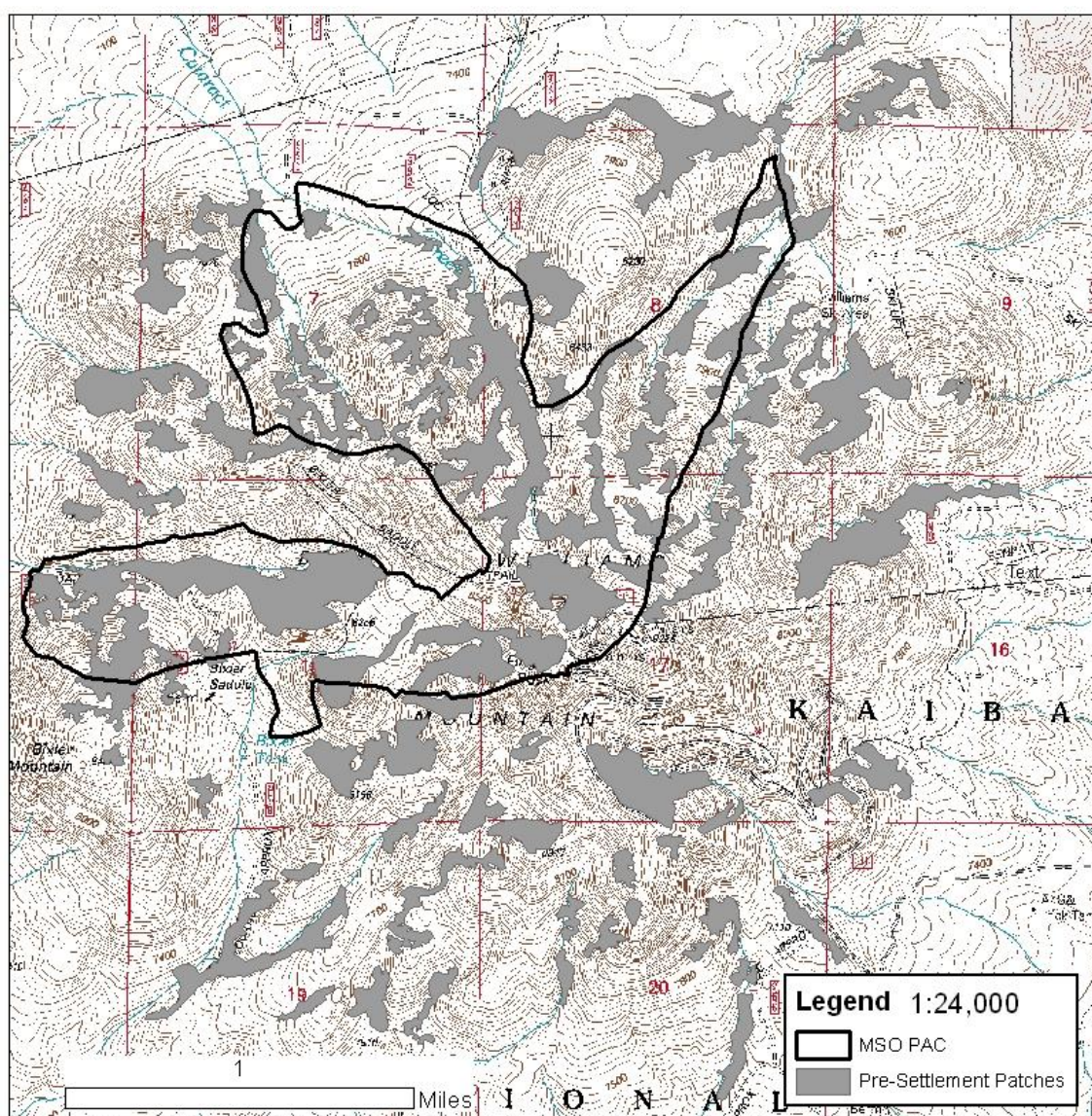


Figure F-1. Pre-settlement patches for MSO and bugbane conservation